

Global Temperature vs San Francisco's Temperature

1. Overview

- The analysis and visualization in this write-up are done in EXCEL with data extracted using SQL.
- Moving average is calculated using Excel's Data Analysis add-on
- Major concern here is to choose the window of calculating moving average. I started by using 5 years and eventually decided to use 10 years, because temperature could be changing at tiny paces over the years and a wider window such as 10 years helps to visualize the trend more clearly. In addition, two plots are plotted within the same timeframe.

2. SQL

- Extracting Global data
`SELECT * FROM global_data`
- Extracting city data
`SELECT year, avg_temp FROM city_list WHERE city="San Francisco"`

3. Plots of temperature trends.

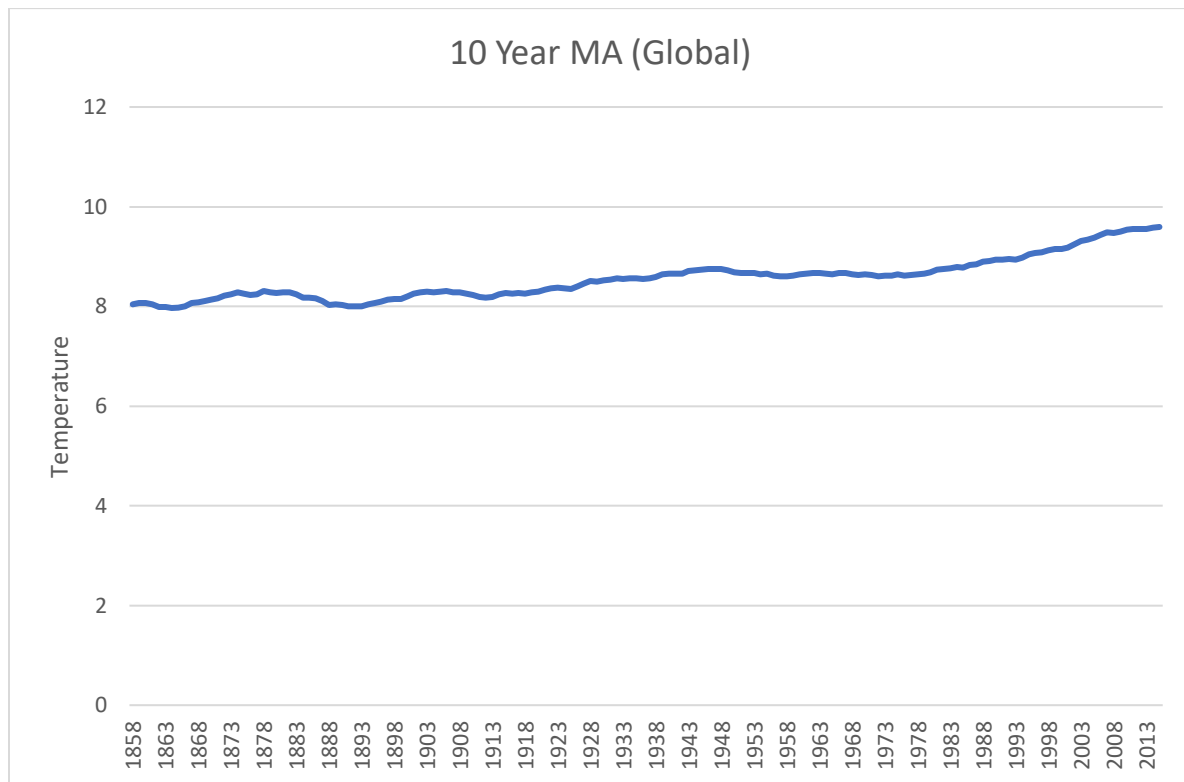


Figure 1. Global Temperature with 10 Year Moving Average

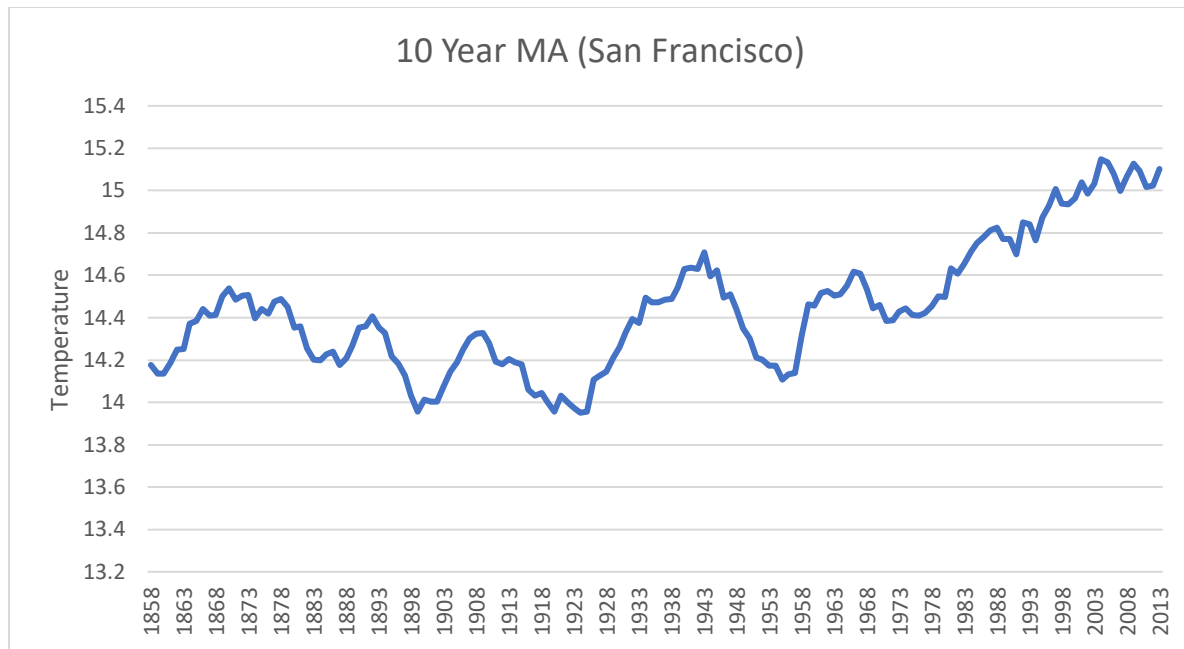


Figure 2. San Francisco's Temperature with 10 Year Moving Average

Observations:

- Comparing to global temperature, San Francisco is hotter than the global average. Such difference of roughly 5 to 6 degrees is consistent over the last 200 years.
- Looking at the overall trend over years, both San Francisco's temperature and global temperature is rising. It seems like the global warming is happening. Noticeably, the global temperature is consistently rising, while San Francisco's temperature is dropping in the late 1800s.
- Since 1970s, San Francisco's temperature has been rising up quickly and showing less fluctuations compared to previous decades.
- Similarly, the global temperature seems to increase faster since 1970s.